

ABSTRACT OF THE DISCLOSURE

5 An ion transport membrane system comprising (a) a pressure vessel having an interior, an exterior, an inlet, and an outlet; (b) a plurality of planar ion transport membrane modules disposed in the interior of the pressure vessel and arranged in series, each membrane module comprising mixed metal oxide ceramic material and having an interior region and an exterior region, wherein any inlet and any outlet of the pressure vessel are in flow communication with exterior regions of the membrane
10 modules; and (c) one or more gas manifolds in flow communication with interior regions of the membrane modules and with the exterior of the pressure vessel.

The ion transport membrane system may be utilized in a gas separation device to recover oxygen from an oxygen-containing gas or as an oxidation reactor to oxidize compounds in a feed gas stream by oxygen permeated through the mixed metal oxide
15 ceramic material of the membrane modules.

20

25